

LISTING OF CLAIMS:

Please consider the claims as follows:

1 1. (currently amended) Apparatus adapted for use in long haul transmission
2 in an optical communication system, comprising:
3 ~~a modulator~~ at least one modulator, for modulating an optical phase of pulses
4 within a sequence of return-to-zero (RZ) pulses having a duty cycle of less than or equal
5 to approximately 33% in accordance with an input digital data stream to form an optical
6 phase modulated signal, ~~said modulator being~~ encoded by one of phase shift keying
7 (PSK), differential phase shift keying (DPSK) or quadrature phase shift keying (QPSK)
8 ~~modulator in accordance with an input digital data stream; and~~
9 a wavelength division multiplexer adapted to combine an output signal of said at
10 least one modulator with other optical phase modulated signals having optical carriers
11 with different wavelengths;
12 a dispersion managed optical transmission medium for transmitting an output
13 wavelength division multiplexed signal of said wavelength division multiplexer; and
14 a means for transmitting the ~~optical phase modulated~~ wavelength division
15 multiplexed signal in the ~~in the~~ dispersion managed optical transmission medium. ~~medium;~~
16 ~~wherein dispersion management is provided by applying pre-dispersion~~
17 ~~compensation to the optical phase modulated signal containing pulses having a duty cycle~~
18 ~~of less than or equal to about 33%, and applying post-dispersion compensation to the~~
19 ~~transmitted signal.~~

2-9. (canceled)

1 10. (currently amended) The invention defined in claim 1 wherein said at least
2 one modulator is a LiNbO3 phase modulator.

1 11. (currently amended) The invention defined in claim 1 wherein said at least
2 one modulator is a LiNbO3 Mach-Zehnder phase modulator.

1 12. (currently amended) The invention defined in claim 1 wherein said
2 apparatus further comprises [[a]] at least one receiver including a delay demodulator for
3 receiving said input digital data stream ~~the optical phase modulated signal~~ from the
4 dispersion managed optical transmission medium.

1 13. (currently amended) The invention defined in claim 1 wherein said
2 apparatus further comprises a receiver including [[a]] at least one balanced receiver for
3 recovering said input digital data stream from a transmitted wavelength division
4 multiplexed signal. ~~the phase modulated signal.~~

14. (canceled)

1 15. (previously presented) The invention defined in claim 1 wherein said
2 transmission medium includes discrete or distributed means of erbium-doped fiber
3 amplification (EDFA) or Raman amplification.

1 16. (currently amended) A method of transmission ~~in an~~ for long haul optical
2 communications, comprising the steps of:

3 modulating an optical carrier signal in a sequence of return-to-zero (RZ) pulses
4 having a duty cycle of less than or equal to approximately 33%;

5 modulating an optical phase of said pulses in accordance with an input digital data
6 stream to form an optical phase modulated signal via one of phase shift keying (PSK),
7 differential phase shift keying (DPSK) or quadrature phase shift keying (QPSK);

8 combining said optical phase modulated signal with other optical phase
9 modulated signals having optical carriers with different wavelengths to form a
10 wavelength division multiplexed signal; and

11 transmitting said ~~optical phase modulated~~ wavelength division multiplexed signal
12 in a dispersion managed optical transmission medium. ~~medium;~~

13 ~~wherein dispersion management is provided by applying pre-dispersion~~
14 ~~compensation to the optical phase modulated signal containing pulses having a duty cycle~~
15 ~~of less than or equal to about 33%, and applying post-dispersion compensation to the~~
16 ~~transmitted signal.~~

17-20. (canceled)

1 21. (newly presented) The method of claim 16, wherein dispersion
2 management is provided by applying pre-dispersion compensation and post-dispersion
3 compensation to said wavelength division multiplexed signal.

1 22. (newly presented) The method of claim 16, wherein dispersion
2 management is provided by soliton transmission of said wavelength division multiplexed
3 signal.

1 23. (newly presented) The method of claim 22, wherein the dispersion
2 managed optical transmission medium comprises a plurality of serially interconnected
3 fibers arranged such that adjacent interconnected fibers have alternating and opposite
4 dispersion characteristics.

1 24. (newly presented) The method of claim 16, wherein the dispersion managed
2 optical transmission medium comprises one or more optical fibers exhibiting a high
3 chromatic dispersion.

1 25. (newly presented) The apparatus of claim 1, wherein dispersion
2 management is provided by applying pre-dispersion compensation and post-dispersion
3 compensation to said wavelength division multiplexed signal.

1 26. (newly presented) The apparatus of claim 1, wherein dispersion
2 management is provided by soliton transmission of said wavelength division multiplexed
3 signal.

1 27. (newly presented) The apparatus of claim 26, wherein the dispersion
2 managed optical transmission medium further comprises a plurality of serially
3 interconnected fibers arranged such that adjacent interconnected fibers have alternating
4 and opposite dispersion characteristics.

1 28. (newly presented) The method of claim 11, wherein the dispersion
2 managed optical transmission medium comprises one or more optical fibers exhibiting a
3 high chromatic dispersion.